Developing a Framework for Regional Water Planning in South Carolina

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The eight recommended planning regions for South Carolina

The same basins used by DHEC for water quality planning.

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What is the objective?

The objective is to develop a water-resources management plan for each basin to ensure that an adequate and reliable supply of water will be available to sustain all future uses.

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Why regional water plans?

Because different regions of the State have different sources and uses of water, plans should be developed that are tailored to each region's specific resources and needs.

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Why is it important?

Economic development, environmental protection, and public health are critical quality-of-life issues that all depend on a reliable supply of water.

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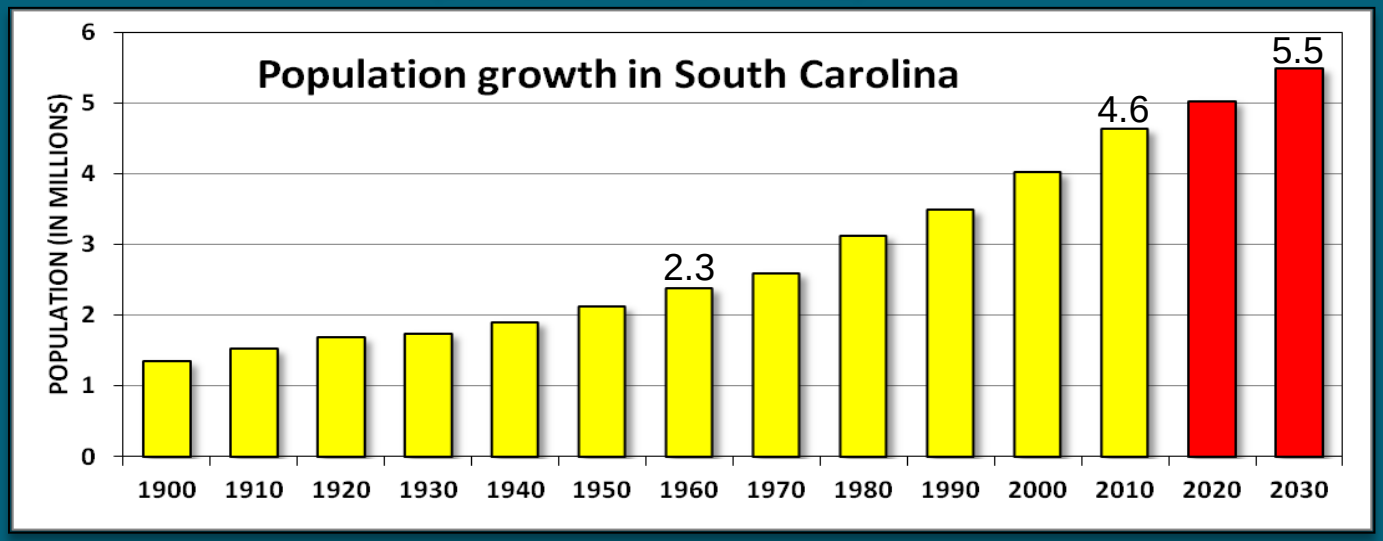
Why now?

Demand for water continues to increase

Water use from 1990-2005:

- Municipal use up 46%
- Thermoelectric use up 26%
- Irrigation use up by 40%

(Source: DHEC and USGS)



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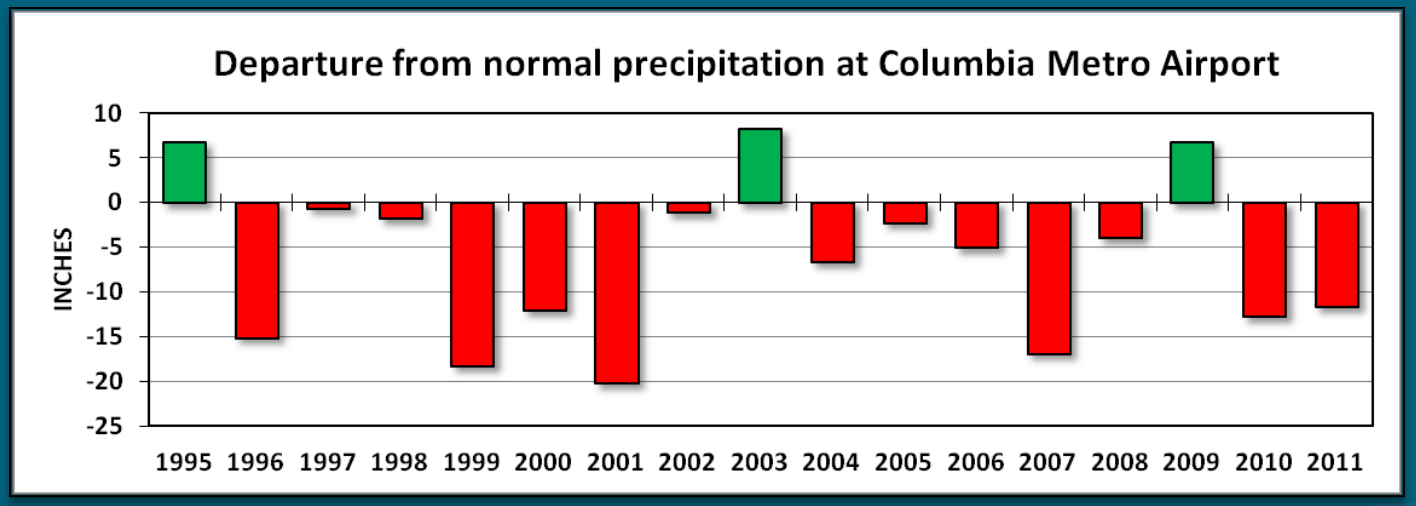
Why now?

Continued water availability is uncertain

- Drought of record in South Carolina (1998-2002)
- Drought of record in Savannah River basin (2006-2008)



"Normal" precipitation is 48.27 inches (1971–2000 average).

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SCDNR general recommendations for developing regional water plans

- Planning regions should coincide with river basins
- Technical information should be developed by the State or by consultants with State oversight
- Planning process should be driven by stakeholders
- Conservation should be an integral component of planning
- Water quantity and quality planning should be integrated
- Surface and groundwater planning should be integrated

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SCDNR general recommendations for how planning should proceed

1. Make assessments of water quantity
   How much water do we have?
2. Develop water-demand forecasts
   How much water will we need?
3. Test water-demand forecasts with models
   Where and when will we have water shortages?
4. Develop regional water plans
   How will we meet future demands?
5. Update the State Water Plan
   What have we learned?

How much water do we have?

Develop unimpaired flow data sets for each basin

Unimpaired flows are the estimated flows in a river after removing the effects caused by human activities such as withdrawals and discharges

Unimpaired flows should be calculated for the period 1930-present

How much water will we need?

Consumptive water-demand forecasts need to be made for agriculture, energy, industry, and water supply

Forecasts need to be developed on a 5-10 year interval over a 50-year planning period

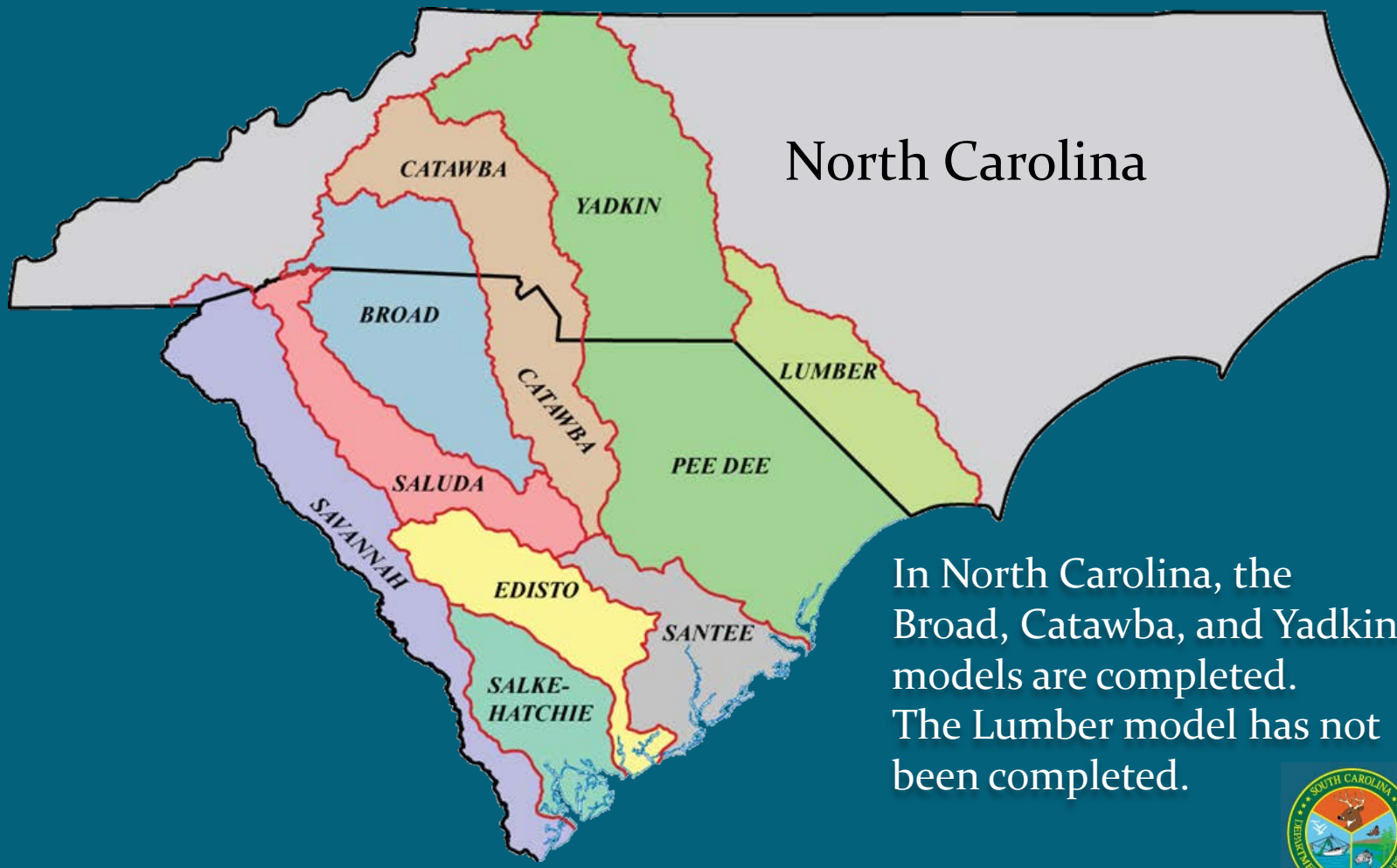
Where and when will we have shortages?

Develop surface-water quantity models for each basin to simulate flows

Models will use the unimpaired flow data and the forecasts to determine if historic flow patterns can meet future demands of the basin

Models would determine when, where, how long, and how often there would be water shortages in the basin

Model development in North Carolina



In North Carolina, the Broad, Catawba, and Yadkin models are completed. The Lumber model has not been completed.

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How will we meet future demands?

A regional water-supply plan will be developed for each basin

These will be developed by basin advisory groups composed of stakeholders, with oversight from the State

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What will each regional water plan contain?

1. Current and projected water demands
2. An assessment of existing surface and groundwater supplies
3. An evaluation of water supply and demand to determine if a surplus or deficit will occur

(Modeled after the Texas Water Plan)

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What will each regional water plan contain?

4. A detailed description of water management strategies designed to meet the future demands of the basin, including:
   - An evaluation of all strategies (e.g. quantity, reliability, and cost of water delivered)
   - Calculation of infrastructure costs
   - Environmental factors

(Modeled after the Texas Water Plan)

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Possible management strategies

- water conservation
- expanded use of existing supplies
- conjunctive use of surface and groundwater
- reallocation of reservoir storage
- enhancements of yields from existing sources
- expansion of reservoirs
- reverse osmosis and desalination
- aquifer storage and recovery
- interbasin transfers of water
- reuse of treated wastewater and stormwater
- smart growth
- new reservoirs

(Modeled after the Texas Water Plan)

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What will each regional water plan contain?

5. Water conservation recommendations
6. A chapter describing how the regional water plan is consistent with long-term protection of the state's water resources
7. A chapter describing the financing needed to implement the water management strategies recommended

(Modeled after the Texas Water Plan)

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State Water Plan

The State Water Plan would be updated after the completion of the regional plans.

- Assess the overall condition of water resources in the State
- Summarize and evaluate statewide trends in water use, demand, and availability
- Offer water-resource policy and program recommendations
- Prioritize water-resource needs of the State

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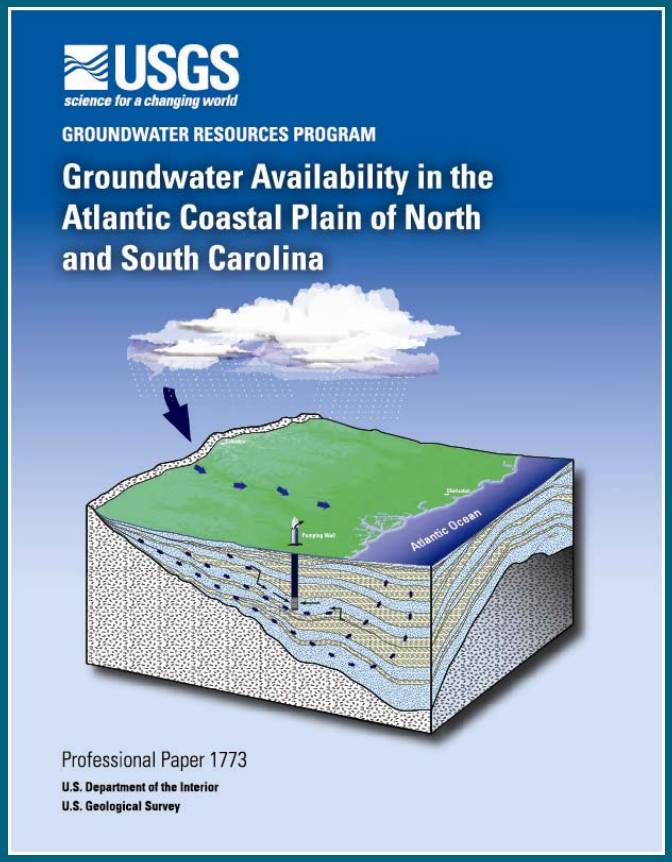
Groundwater availability



The natural planning unit for groundwater is the aquifer

Groundwater assessments should be made of each aquifer

Models should be developed to estimate sustainable yields of each aquifer

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Conservation

"Water conservation must become an integral component of effective water resources management…and should be the first approach for extending or augmenting available supplies."

South Carolina Water Plan (2004)

Public Involvement

"The effective management of South Carolina's water resources is beyond the scope of any one agency or organization and will require cooperation and shared responsibility among Federal, State, and local agencies, as well as public and private parties."

South Carolina Water Plan (2004)

Guidance Document for Regional Water Planning

The Hydrology Section is currently preparing a white paper that will recommend:

- Guiding principles of regional plan development
- Rules governing the regional planning process
- Composition of the regional water planning groups
- Roles and responsibilities of the parties involved
- Planning regions

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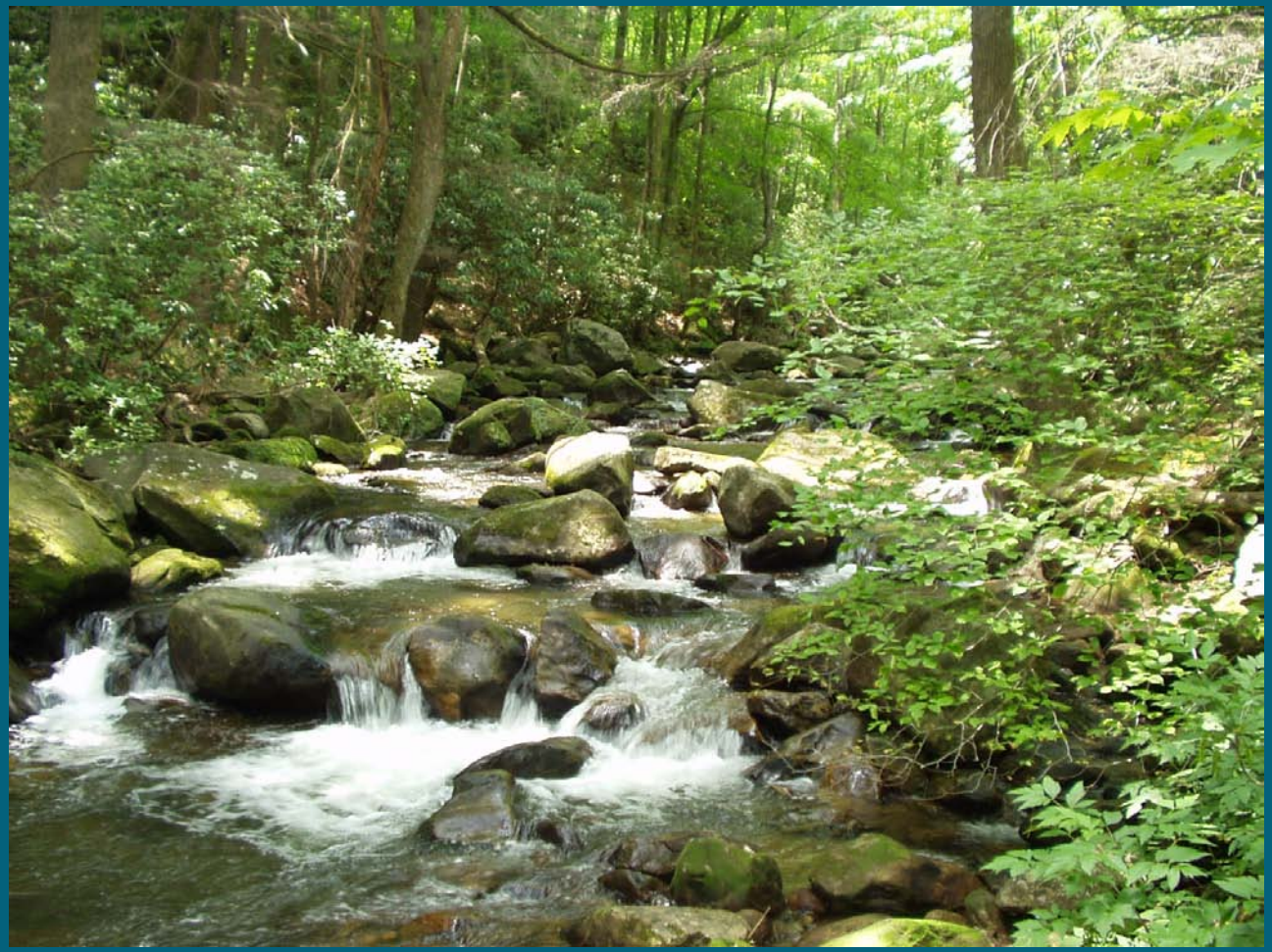
What are other states doing?

- Florida: Regional water plans since the late 1990s for its 5 water management districts.
- Georgia: Completed regional water plans for its 11 planning regions.
- North Carolina: Currently developing regional water plans for its 17 river basins.
- Virginia: Mandated development of local and regional water plans in 2005.

Questions, comments, advice



The Middle Saluda River at Jones Gap State Park.

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